

## CLAIMS

1. A wound dressing comprising a therapeutic agent and a barrier layer for initially separating the therapeutic agent from wound fluid when in use, wherein the  
5 barrier layer comprises modified elastin wherein
  - (i) the elastin has been modified so that it is less susceptible to degradation by one or more non-elastase proteases found in wound fluid; or
  - (ii) the elastin has been modified so that there are additional elastase sensitive  
10 regions which are selectively degraded by elastase.
2. A wound dressing according to claim 1 wherein the non-elastase protease is a matrix metalloproteinase, preferably the 72kDa gelatinase (MMP2), the 92kDa gelatinase (MMP9), matrilysin or metalloelastase.  
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3. A wound dressing according to claim 1 wherein the barrier layer comprises elastin that has been modified so that it is less susceptible to degradation by a non-elastase protease found in wound fluid and wherein at least some of the Pro-Xaa-(Gly/Ala)-Leu/Ile, Pro-Xaa-Ala-Ala-Leu/Ile, Pro-Xaa-(Gly/Ala)-Val/Phe or Pro-Xaa-Ala-Ala-Val/Phe sequences (wherein Xaa denotes any amino acid) are  
20 modified in such a way that the sequences are less susceptible, and preferably no longer susceptible, to cleavage by the 92kDa gelatinase.
4. A wound dressing according to any one of the preceding claims wherein the  
25 elastin has been modified so that it is less susceptible to degradation by a non-elastase protease and has been modified so that there are additional elastase sensitive regions which are selectively degraded by elastase.
5. A wound dressing according to claim 1 or 4 wherein the elastin contains  
30 additional Gly-Gly, Ala-Gly, Val-Gly, Gly-Ala or Ala-Ala sequences.

6. A wound dressing according to any one of the preceding claims wherein the therapeutic agent is selected from the group consisting of antimicrobial substances, pain relieving substances, protease inhibitors, and mixtures thereof.

5 7. Modified elastin as described in any one claims 1 to 5.

8. A polynucleotide sequence encoding a modified tropoelastin polypeptide which polypeptide may be cross-linked with other such tropoelastin polypeptides to form the modified elastin according to claim 7.

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9 A method of producing a wound dressing which is responsive to wound infection the method comprising producing a wound dressing according to claim 1 wherein in response to infection the therapeutic agent is released into the wound.

15 10 Use of modified elastin as described in any one claims 1 to 5 in the manufacture of an infection-responsive wound dressing.